

## ***Interactive comment on “Validation of Aeolus winds using radiosonde observations and NWP model equivalents” by Anne Martin et al.***

**Anonymous Referee #1**

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### Review

The manuscript "Validation of Aeolus winds using radiosonde observations and NWP model equivalents" by Martin et al. provides a good examination of the Aeolus data, mainly for northern midlatitudes but also globally. The validation results cover Aeolus data from its launch to the end of December 2019. Thus, it provides a useful analysis for users of the data. Additionally, it is demonstrated how the bias in Aeolus data can be reduced bringing the data quality towards the mission requirements. The manuscript is well written, concise and has appropriate figures. Only one minor comment is listed below. The reviewer recommends publication after a minor revision.

Minor comment: - paragraph 4.1.1: In Figure 4, the global average is shown. It would be of interest to see the latitudinal behavior. This could be done as a shaded plot

with time and latitude on the axis for only one correction per model. The three different choices shown only as average numbers over the time series in table 3 is sufficient, but needs a significance test for the difference between methods.

Technical stuff> - Check spelling for the references: Källén, Zagar (with the accent over the Z), and Savli (with accent over S, first name is Matic) - line 118: Consider to rephrase "during the ascent and the ascent time" - line 142: typo "operationally" - generally: Terms like "the Rayleigh winds mean absolute bias" seem unusually to me. Consider just "the Rayleigh wind mean absolute bias". And equivalently for Mie and random errors. - line 185: typo "differs" - line 188: Does the lower representativeness error of the radiosondes mean better agreement with Aeolus? Please clarify. - line 189: Higher resolution of radiosondes? Consider. - line 197: Please rephrase the sentence: "For the Mie winds, the global...". - line 201: Incompatible to what? Consider to remove term "incompatible". - line 202: typo "positively" - line 206: "mean differences" = bias? Please keep consistent names. Also in the rest of the paragraph. - line 225: "random difference" = random error, standard deviation, sigma? Same as previous comment. - line 227: typo "shows" and "but" - line 230: consider "signal does not only depend on" - line 232: For the comparison of the standard deviation and MAD, you could show a histogram. This could also be used to justify the thresholds for the gross errors in line 106 and 107. - line 304: typo "estimate" - line 359: typo "do not" - line 398: typo "is not" - Figure 5: Please add the month name into the panels of the figure. - line 414: typo "state" - line 435f: Consider to rephrase the sentence "Since a one-dimensional...". It is difficult to understand. - line 444: typo "onboard" - references: Correct also names from first point.

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Discussion paper

